

4. [PREVIOUSLY AMENDED] An isolated nucleic acid segment consisting of a nucleotide sequence selected from the group consisting of SEQ ID Nos: 3-53.

5. [CANCELED]

6. [PREVIOUSLY AMENDED] A vector containing the DNA of claim 2 or 3.

7. [PREVIOUSLY AMENDED] The vector of claim 6, wherein said vector is a retroviral vector.

8. [PREVIOUSLY AMENDED] A host transformed with the vector of claim 6.

9. [CANCELED]

10. [PREVIOUSLY AMENDED] A kit for determining an alteration in a mammalian MSH5 gene by DNA amplification comprising:  
a set of DNA oligonucleotide primers in a vial, set allowing synthesis of a DNA encoding the DNA mismatch repair gene, wherein said primers are selected from the isolated nucleotide segments of claim 3.

11. [CANCELED]

12. [PREVIOUSLY AMENDED] A kit for determining an alteration in a mammalian MSH5 gene by DNA amplification comprising:  
a set of DNA oligonucleotides primers in a vial, said set allowing synthesis of a DNA ending the DNA mismatch repair gene, wherein said primers are selected from the group consisting of SEQ ID NOS:3-50.

13. [CANCELED]

14. [CANCELED]

15. [CANCELED]

16. [CANCELED]

17. [CANCELED]

18. [CANCELED]

19. [CANCELED]

20. [CANCELED]

21. [CANCELED]

22. [CANCELED]

23. [CANCELED]

24. [CANCELED]

25. [CANCELED]

26. [CANCELED]

27. [CANCELED]

28. [CANCELED]

29. [CANCELED]

30. [CANCELED]

31. [CANCELED]

32. [CANCELED]

33. [CANCELED]

34. [CANCELED]

35. [CANCELED]

36. [CANCELED]

37. [CANCELED]

38. [CANCELED]

39. [PREVIOUSLY AMENDED] The isolated and purified nucleotide segment of claim 2, wherein the nucleotide segment is the coding region of SEQ ID NO:1.

40. [PREVIOUSLY AMENDED] An isolated and purified nucleotide segment, wherein said nucleotide segment is a fragment of at least 25 contiguous nucleotides of SEQ ID NO: 1, and wherein said nucleotide segment is mRNA or cDNA.

41. [CURRENTLY AMENDED] An isolated and purified nucleotide segment, wherein said nucleotide segment is a fragment of at least 25 contiguous nucleotides between nucleotides 235-1908 of SEQ ID NO: 1, and wherein said nucleotide segment is mRNA or cDNA.

42. [PREVIOUSLY AMENDED] An isolated and purified nucleotide segment encoding the amino acid sequence of SEQ ID NO:2, wherein said nucleotide segment is mRNA or cDNA.

43. [PREVIOUSLY AMENDED] The isolated and purified nucleic acid segment of claim 2, wherein said nucleotide segment consists of SEQ ID NO:1.

44. [CANCELED]

45. [CURRENTLY AMENDED] An isolated and purified nucleotide ~~SEQ~~ sequence segment consisting of

(a) at least one exon from SEQ ID NO:1 wherein starting at position 235 and continuing continuously, exon 1 is 221 basepairs, exon 2 is the next 160 basepairs, exon 3 is the next 124 basepairs, exon 4 is the next 81 basepairs, exon 5 is the next 63 basepairs, exon 6 is the next 122 basepairs, exon 7 is the next 110 basepairs, exon 8 is the next 36 basepairs, exon 9 is the next 83 basepairs, exon 10 is the next 46 basepairs, exon 11 is the next 139 basepairs, exon 12 is the next 63 basepairs, exon 13 is the next 129 basepairs, exon 14 is the next 73 basepairs, exon 15 is the next 110 basepairs, exon 16 is the next 81 basepairs, exon 17 is the next 88 basepairs, exon 18 is the next 190 basepairs, exon 19 is the next 127 basepairs, exon 20 is the next 150 basepairs, exon 21 is the next 75 basepairs, exon 22 is the next 144 basepairs, exon 23 is the next 138 basepairs, exon 24 is the next 74 basepairs, and exon 25 is the next 254 basepairs;

(b) at least one intron sequence, wherein said intron sequence is selected from the group of hMSH5 introns consisting of SEQ. ID NOS:55-85.

46. [PREVIOUSLY ADDED] The isolated and purified nucleic acid of claim 3, further comprising a radioactive label or a fluorescent tag.

47. [PREVIOUSLY ADDED] The isolated an purified nucleotide segment of claim 41, further comprising a radioactive label or fluorescent tag.

48. [PREVIOUSLY ADDED] The isolated nucleotide segment of claim 3, wherein said fragment are selected from nucleotides 235-1908 of SEQ ID NO:1.

49. [CANCELED]

#### REMARKS

The amendment to claim 3 is supported throughout the specification particularly at pages 51-58. See particularly page 57 which identifies the 25 exons of the human MSH2 gene which is part of SEQ ID NO:1 and specifies their specific sizes in base pairs.

The amendment to claim 41 is supported at pages 51, 52, and claim 49. To conform to this amendment claim 49 has been canceled. Claim 45 has been amended for editorial purposes to replace the abbreviation "SEQ" with the word it stands for, sequence. As such, these amendments do not constitute new matter and their entry is respectfully requested.